In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing Of Claims:

Please amend the claims as follows:

1. (Currently amended) A method for detecting or quantifying a known target polynucleotide having a known nucleotide sequence comprising:

(a) hybridizing a first primer to a specific region of the known target polynucleotide and extending the first primer using ~~a~~ one to three of four types of non-terminator nucleotides selected from A, T or U, G, and C ~~non-terminator nucleotide mixture formulated~~ to produce equal length primer extension products wherein said extended portion of the first primer comprises the one to three of four types of nucleotides;

(b) hybridizing the ~~equal~~ equally extended ~~length extension~~ portion of first primer ~~products~~ to a second primer, wherein the second primer comprises a region complementary to the equally extended portion of the first primer;

(c) producing extension products from the second primer; and

(d) detecting the extension products from the second primer.

2. (Currently amended) The method of claim 1, wherein the extension products of the first primer comprise a primer portion and an extended portion and the extended portion comprises the one to three of the four types of nucleotides.

3. (Canceled).

4. (Original) The method of claim 2, wherein the second primer is not complementary to the first primer.

5. (Original) The method of claim 1, wherein the amount of detectable extension product correlates to the amount of target polynucleotide.

6. (Original) The method of claim 1, wherein the hybridization of the first and second primers occurs under high stringency.

7. (Original) The method of claim 1, wherein the extension products from the second primer are detected using fluorescence spectroscopy or mass spectroscopy.

8. (Original) The method of claim 1, wherein the extension products from the second primer comprise a detectable label.

9. (Currently amended) The method of claim 8, wherein the ~~labeled~~ label comprises an epitope, fluorophore, metal particle, enzyme, carbohydrate, polypeptide, radioactive isotope, dye, biotin, or digitonin.

10. (Currently amended) The method of claim 1, wherein the first or second primer comprises deoxyribonucleic acid, ribonucleic acid, or a combination thereof.

11. (Currently amended) The method of claim 1, wherein the target polynucleotide ~~nucleic acid of interest~~ comprises deoxyribonucleic acid, ribonucleic acid, or a combination thereof.

12. (Original) The method of claim 1, wherein the extension products are enzymatically produced.

13. (Original) The method of claim 12, wherein the enzyme is template-dependent.

14. (Original) The method of claim 13, wherein the template-dependent enzyme is DNA polymerase, RNA polymerase or reverse transcriptase, or a combination thereof.

15. (Original) The method of claim 1, wherein the target polynucleotide is synthesized enzymatically in vivo, in vitro, or synthesized non-enzymatically.

16. (Original) The method of claim 1, wherein the target polynucleotide is synthesized by polymerase chain reaction.

17. (Original) The method of claim 1, wherein the target polynucleotide comprises genomic DNA from an organism, RNA transcripts thereof, or cDNA prepared from RNA transcripts thereof

18. (Original) The method of claim 17, wherein the organism is a plant, microorganism, bacteria, virus.

19. (Original) The method of claim 17, wherein the organism is a vertebrate or invertebrate.

20. -22. (Canceled).

23. (Original) The method of claim 1, wherein the first primer comprises one or more moieties that permit affinity separation of the primer from unincorporated reagent and/or the polynucleotide of interest.

24. (Original) The method of claim 1, wherein the second primer comprises one or more moieties that allows immobilization of the second primer onto a solid support to produce an immobilized second primer sequence.

25. (Original) The method of any one of claims 23 or 24, wherein the moieties comprises a biotin, digitonin, a phosphate group, or amine group.

26. (Original) The method of claim 1, wherein the second primer is synthesized directly on a solid support to produce an immobilized second primer sequence.

27. (Original) The method of claim 26, wherein the synthesis is accomplished enzymatically, chemically, or physically.

28. (Original) The method of claim 1, the first or second primer is immobilized onto a solid support to produce an immobilized target nucleic acid sequence.

29. (Original) The method of claim 28, wherein the first or second primer can be cleaved from the solid support by a chemical, enzymatic or physical process.

30. (Original) The method of claim 28, wherein immobilization is accomplished via a photocleavable bond.

31. (Original) The method of claim 28, wherein the solid support comprises beads, flat surfaces, chips, capillaries, pins, combs or wafers.

32. (Original) The method of claim 28, wherein the immobilization of the first primer is accomplished by hybridization between a complementary capture nucleic acid molecule, which has been previously immobilized to a solid support.

33. (Original) The method of claim 28, wherein said immobilization is accomplished via direct bonding between the solid support and a portion of the nucleic acid molecule, which is distinct from the target nucleic acid sequence.

34.- 43. (Canceled).

44. (Currently amended) A method of detecting a target polynucleotide comprising:

(a) hybridizing a first primer to the target polynucleotide;

(b) forming equal length primer extension products using a nucleotides consisting of X, Y, and Z, wherein X and Y are different purine non-terminator nucleotides, and Z is a pyrimidine

non-terminator nucleotide; or X and Y are different pyrimidine non-terminator nucleotides, and Z is a purine non-terminator nucleotide;

(c) hybridizing the extended portion of the ~~extension products of~~ first primer of (b) to a second primer, wherein the second primer comprises a region complementary to the extended portion of first primer consisting of one to three types of nucleotides selected from the group consisting of A, T or U, G, and C;

(d) extending the second primer with at least one nucleotide having a detectable marker using a portion of the equal length extension products of (b) as a template; and

(e) correlating the amount of detectable marker in the extension products of (d) with the amount of target polynucleotide.

45. (Original) The method of claim 44, wherein the second primer hybridizes to the non-primer portion of the extension product of (b).

46. (Currently amended) The method of claim 44, wherein a primer portion of the extension products of (b) serves as a template strand for extending the second primer.

47. (Currently amended) A method ~~for~~ to assist in diagnosing cancer in a host, comprising:

(a) obtaining from the host a sample comprising a polynucleotide;

(b) contacting the sample with a first primer, the first primer comprising a nucleotide sequence complementary to a portion of a known target polynucleotide, wherein the known target polynucleotide is an oncogene or variation thereof involved in or related to cancer;

(c) extending the primer using a non-terminator nucleotide mixture formulated to produce equal length primer extension products;

(d) hybridizing the equal length extension products to a second primer, wherein the second primer comprises a region for hybridizing to the first primer consisting of one to three types of nucleotides selected from the group consisting of A, T or U, G, and C;

(e) producing extension products from the second primer; and

(f) detecting the extension products from the second primer, wherein the detection of an extension product from the second primer is indicative of cancer ~~a pathology~~ or predisposition to cancer ~~a pathology of the host~~.

48. (Currently amended) The method of claim 47, wherein the known target polynucleotide ~~is an oncogene or variant thereof~~ encodes a protein selected from the group consisting of growth factors, receptor tyrosine kinases, membrane associated non-receptor tyrosine kinases, G-protein coupled receptors, membrane associated G-proteins, serine/threonine kinases, and nuclear DNA-binding/transcription factors.